# Patient Safety
# August, 2003

1: AACN Clin Issues. 2003 Aug;14(3):310-9.
Human factors: imperative concepts for information systems in critical care.
Staggers N.
This article provides an overview of human factors, ergonomics, human-computer interaction, and usability concepts as they relate to critical care settings. The use of these concepts can improve patient safety and the productivity of nurses, especially as they relate to the use of information systems. A framework for human-computer interaction is presented. Examples illustrate how the suite of human factors concepts is used to create intuitive, effective data presentations for use in critical care including an intensive care unit (ICU) summary display, an alternative graphic display, and modeling information sources of decision making in a neonatal ICU. The importance of integrating these concepts into advanced practice nurses' environments is made apparent.
PMID: 12909799 [PubMed - in process]

2: Am J Clin Pathol. 2003 Jul;120(1):18-26.
Classifying laboratory incident reports to identify problems that jeopardize patient safety.
Astion ML, Shojania KG, Hamill TR, Kim S, Ng VL.
Department of Laboratory Medicine, University of Washington School of Medicine, Seattle, WA, USA.
We developed a laboratory incident report classification system that can guide reduction of actual and potential adverse events. The system was applied retrospectively to 129 incident reports occurring during a 16-month period. Incidents were classified by type of adverse event (actual or potential), specific and potential patient impact, nature of laboratory involvement, testing phase, and preventability. Of 129 incidents, 95% were potential adverse events. The most common specific impact was delay in receiving test results (85%). The average potential impact was 2.9 (SD, 1.0; median, 3; scale, 1-5). The laboratory alone was responsible for 60% of the incidents; 21% were due solely to problems outside the laboratory's authority. The laboratory function most frequently implicated in incidents was specimen processing (31%). The preanalytic testing phase was involved in 71% of incidents, the analytic in 18%, and the postanalytic in 11%. The most common preanalytic problem was specimen transportation (16%). The average preventability score was 4.0 (range, 1-5; median, 4; scale, 1-5), and 94 incidents (73%) were preventable (score, 3 or more). Of the 94 preventable incidents, 30% involved cognitive errors, defined as incorrect choices caused by insufficient knowledge, and 73% involved noncognitive errors, defined as inadvertent or unconscious lapses in expected automatic behavior.

Publication Types:
Evaluation Studies
PMID: 12866368 [PubMed - indexed for MEDLINE]

3: Am J Health Syst Pharm. 2003 Jul 1;60(13):1379-81.
Patient safety mandates: a means to an end?
Adra M, Decker EL.
Department of Pharmacy, Tufts-New England Medical Center, 750 Washington Street #420, Boston, MA 02111, USA. madra@tufts-nemc.org
PMID: 12901042 [PubMed - in process]

4: Am J Ophthalmol. 2003 Aug;136(2):244-51.
Randomized clinical trial of topical betaxolol for persistent macular edema after vitrectomy and epiretinal membrane removal.
Kobayashi H, Kobayashi K, Okinami S.
Department of Ophthalmology, Saga Medical School, Nabeshima, Saga, Japan. kobayas3@post.saga-med.ac.jp
PURPOSE: To report the efficacy and safety of topical betaxolol for treatment of persistent macular edema. DESIGN: Randomized clinical trial. METHODS: Thirty-seven eyes (37 patients) with best-corrected visual acuity between 20/200 and 20/50 and macular edema that remained for 3 months after vitrectomy and removal of epiretinal membrane were prospectively, randomly assigned to receive betaxolol or placebo. Nineteen eyes of 19 patients received betaxolol twice daily, and 18 eyes of 18 patients received placebo as a randomized comparison group. The patients were followed up for 6 months. This study evaluated the effect of betaxolol on best-corrected visual acuity and area of macular edema, which was digitally measured on serial fluorescein angiogram. Calculations of mean best-corrected visual acuity were based on logarithm of the minimal angle of resolution (logMAR). To assess changes in area of edema, the initial (pretreatment) size of the edema was set to 100%, and all posttreatment measurements were normalized relative to the initial size. RESULTS: Mean best-corrected visual acuity at baseline was 0.216 (20 of 92.6) and 0.244 (20 of 82.0) in the treatment and control group, respectively. Mean area of macular edema was 2.271 +/- 1.629 mm(2) and 2.273 +/- 1.209 mm(2) in the treatment and
control group; there was no significant difference. The visual acuity at 6 months after the start of the follow-up was 0.471 (20 of 42.5) in the treatment group and 0.236 (20 of 84.7) in the control group. Mean changes in logMAR of visual acuity for 3- and 6-month follow-up were -0.282 +/- 0.191 and -0.337 +/- 0.197 in the treatment group, and -0.016 +/- 0.186 and +0.015 +/- 0.267 in the control group; a significant difference was found (P <.0001; P <.0001). Areas of macular edema at 6 months after the start of the follow-up were 1.492 +/- 1.357 mm(2) in the treatment group and 2.125 +/- 1.434 mm(2)in the control group. Mean
change in area of the edema for 6 months were 76.5% +/- 24.1% and 63.4% +/- 28.3% in the treatment group and 92.9% +/- 15.4% and 87.4% +/- 25.6% in the control group; treated patients showed a significantly larger reduction than untreated patients at each examination (P =.0193; P =.0102). No complication associated with treatment or placebo was found. CONCLUSIONS: Topical betaxolol appeared to have a favorable treatment effect in eyes with macular edema that remained after vitrectomy and removal of epiretinal membrane. Further investigation of more cases and longer follow-up are needed.
Publication Types:
Clinical Trial
Randomized Controlled Trial

PMID: 12888045 [PubMed - indexed for MEDLINE]

5: Anaesthesia. 2003 Sep;58(9):833-4.
Patient safety and quality: can anaesthetists play a greater role?
Jorm C.
Sydney, Australia.
PMID: 12911352 [PubMed - in process]

6: Ann Intern Med. 2003 Aug 5;139(3):233-4.
Hospital-onset infections: a patient safety issue.
Johnson JR.
Publication Types:
Comment
Letter
PMID: 12899597 [PubMed - in process]

7: AORN J. 2003 Jul;78(1):46, 49-61, 65-6; quiz 67-70.
Incident reports--their purpose and scope.
Dunn D.
Saint Joseph's Wayne Hospital, NJ, USA.
Accidents in the health care setting may be inevitable, but their frequency can be decreased with a dedicated focus on patient safety. Risk reduction naturally flows from a positive approach to risk containment and control that includes learning from past errors. Part One of this two-part series on incident reports talks about identifying and correcting errors, which results in decreased harm to patients and personnel, decreased facility risk liability and regulatory sanctions, and less negative publicity. Although it may be human nature to make mistakes, it also is human nature to create solutions, identify alternatives, and meet future challenges.
PMID: 12885067 [PubMed - in process]

8: AORN J. 2003 Jul;78(1):16-37; quiz 41-4.
Using failure mode and effects analysis to improve patient safety.
Spath PL.
Brown-Spath and Associates, Forest Grove, Ore, USA.
Failure mode and effects analysis (FMEA) (ie, prospective risk analysis) involves close examination of high-risk processes to identify needed improvements that will reduce the chance of unintended adverse events. This risk assessment process is used in other industries (ie, manufacturing, aviation) to evaluate system safety. Health care organizations now are using it to evaluate and improve the safety of patient care activities. The FMEA process promotes systematic thinking about the safety of patient care processes (ie, what could go wrong, what needs to be done to prevent failures.) The steps of the FMEA process are described and applied to a high-risk perioperative process.
PMID: 12885066 [PubMed - in process]

9: Circulation. 2003 Jul 15;108(2):135-42. Epub 2003 Jul 07.
Efficacy and safety of tenecteplase in combination with the low-molecular-weight heparin enoxaparin or unfractionated heparin in the prehospital setting: the Assessment of the Safety and Efficacy of a New Thrombolytic Regimen (ASSENT)-3 PLUS randomized trial in acute myocardial infarction.
Wallentin L, Goldstein P, Armstrong PW, Granger CB, Adgey AA, Arntz HR, Bogaerts K, Danays T, Lindahl B, Makijarvi M, Verheugt F, Van de Werf F.
Department of Cardiology and Uppsala Clinical Research Centre, Uppsala, Sweden. Lars.Wallentin@ucr.uu.se

BACKGROUND: The combination of a single-bolus fibrinolytic and a low-molecular-weight heparin may facilitate prehospital reperfusion and further improve clinical outcome in patients with ST-elevation myocardial infarction. METHODS AND RESULTS: In the prehospital setting, 1639 patients with ST-elevation myocardial infarction were randomly assigned to treatment with tenecteplase and either (1) intravenous bolus of 30 mg enoxaparin (ENOX) followed by 1 mg/kg subcutaneously BID for a maximum of 7 days or (2) weight-adjusted unfractionated heparin (UFH) for 48 hours. The median treatment delay was 115 minutes after symptom onset (53% within 2 hours). ENOX tended to reduce the composite of 30-day mortality or in-hospital reinfarction, or in-hospital refractory ischemia to 14.2% versus 17.4% for UFH (P=0.080), although there was no difference for this composite end point plus in-hospital intracranial hemorrhage or major bleeding (18.3% versus 20.3%, P=0.30). Correspondingly, there were reductions in in-hospital reinfarction (3.5% versus 5.8%, P=0.028) and refractory ischemia (4.4% versus 6.5%, P=0.067) but increases in total stroke (2.9% versus 1.3%, P=0.026) and intracranial hemorrhage (2.20% versus 0.97%, P=0.047). The increase
in intracranial hemorrhage was seen in patients >75 years of age. CONCLUSIONS: Prehospital fibrinolysis allows 53% of patients to receive reperfusion treatment within 2 hours after symptom onset. The combination of tenecteplase with ENOX reduces early ischemic events, but lower doses of ENOX need to be tested in elderly patients. At present, therefore, tenecteplase and UFH are recommended as the routine pharmacological reperfusion treatment in the prehospital setting.
Publication Types:
Clinical Trial
Randomized Controlled Trial
PMID: 12847070 [PubMed - indexed for MEDLINE]

10: Circulation. 2003 Jul 15;108(2):171-6. Epub 2003 Jun 30.
Mechanical prevention of distal embolization during primary angioplasty: safety, feasibility, and impact on myocardial reperfusion.
Limbruno U, Micheli A, De Carlo M, Amoroso G, Rossini R, Palagi C, Di Bello V, Petronio AS, Fontanini G, Mariani M.
Cardiac and Thoracic Department, University of Pisa, Pisa, Italy. ulimbru@tin.it
BACKGROUND: Effective myocardial reperfusion after primary percutaneous coronary intervention (PCI) may be limited by distal embolization. We tested the safety, feasibility, and efficacy of the FilterWire-Ex (FW), a distal embolic protection device, as an adjunct to primary PCI. METHODS AND RESULTS: Fifty-three consecutive patients undergoing primary PCI with FW protection were compared with a matched control group treated by primary PCI alone. Successful FW positioning was obtained in 47 patients (89%) without complications. Histological analysis of the content of the last 13 filters showed multiple embolic debris in all cases. FW use was associated with lower postinterventional corrected TIMI frame count (22+/-14 versus 31+/-19; P=0.005) and higher occurrence of grade 3 myocardial blush (66% versus 36%; P=0.006) and early ST-segment elevation resolution (80% versus 54%; P=0.006). At multivariate analysis, FW use was the only independent predictor of early ST-segment elevation resolution and of grade 3 myocardial blush. FW patients showed lower peak creatine kinase-MB release (236+/-172 versus 333+/-219 ng/mL; P=0.013) and
greater improvement at 30 days in left ventricular wall motion score index (-0.30+/-0.19 versus -0.18+/-0.26; P=0.008) and ejection fraction (+7+/-4% versus +4+/-7%; P=0.012). CONCLUSIONS: FW use during primary PCI is feasible and
safe. Distal embolization prevention appears to exert a beneficial effect on

markers of myocardial reperfusion and on left ventricular function improvement at 30 days.
Publication Types:
Clinical Trial
Controlled Clinical Trial
PMID: 12835216 [PubMed - indexed for MEDLINE]

11: Curr Opin Infect Dis. 2003 Aug;16(4):327-35.
Hand hygiene: improved standards and practice for hospital care.
Pittet D.
PURPOSE OF REVIEW To review the most recently published literature on hand hygiene practices in healthcare settings.RECENT FINDINGS Adherence with recommendations for hand hygiene remains low, but key factors of noncompliance have been identified and corrective actions proposed. Current guidelines recommend the use of alcohol-based handrub formulations as the new standard of care, thus requiring a system change in most hospitals. In addition, healthcare worker education and motivation are obviously important to modify hand hygiene behavior and must be part of multimodal strategies to enhance compliance in hospitals. Compliance improvement is associated with reduced infection rates and resistance spread. Handrub application according to recommended practices is an alternative to conventional surgical handscrubbing with antiseptic soap and water for surgical hand preparation.SUMMARY System change must be addressed in most hospitals where alcohol-based handrubbing has not become a standard of care. Strategies to improve hand hygiene compliance must be multimodal and include staff education and motivation, the use of performance indicators, and hospital management support. Successful campaigns will result in reduced infection rates, antimicrobial resistance spread, and enhance patient safety.
PMID: 12861085 [PubMed - in process]

12: Health Aff (Millwood). 2003 Jul-Aug;22(4):37-40.
The medical liability crisis of 2003: must we squander the chance to put patients first?
Hatlie MJ, Sheridan SE.
Partnership for Patient Safety, USA.
Medical liability reform should be aligned with a patient-centered, systems-based approach to preventing injury. Lessons learned about medical risk are now buried by the legal system, and communication about risk is haphazard among health care providers and across the interfaces of our legal, regulatory, and health care systems. Tort reform can be a vehicle for breaking down systemic barriers. Proposed reforms include (1) requiring disclosure of medical errors and restricting the use of information disclosed as evidence of guilt; (2) outlawing confidentiality agreements when malpractice cases are settled; (3) abolishing the National Practitioner Data Bank; and (4) establishing a national patient safety authority.
Publication Types:
Comment
PMID: 12889747 [PubMed - in process]

13: Health Aff (Millwood). 2003 Jul-Aug;22(4):41-3.
Creating a safe environment.
Huber GA.
University of Pittsburgh Medical Center, USA.
William Sage provides an excellent rationalization for today's medical liability crisis. Patient safety and a safe environment are related concepts directed at helping to resolve this crisis. His paper helps to bring the complexities into

perspective and suggests the need for an even better definition of "avoidable error" and for a righting of the tort system in the direction of the health care provider. I discuss here two ideas concerning injury compensation tables and medical liability specialty courts to help bring about this "righting."
Publication Types:
Comment
PMID: 12889748 [PubMed - in process]

14: Health Manag Technol. 2003 Jul;24(7):41-2.
The culture of safety. Clinical knowledge and even the right IT aren't enough to guarantee patient safety. A fundamental cultural shift is required.
Brehm J, Ruddick P, Lundquist T.
West Virginia Medical Institute, USA.
PMID: 12858808 [PubMed - indexed for MEDLINE]

15: Health Phys. 2003 Aug;85(2 Suppl):S15-9.
A reassessment of radioactive material security in health care and biomedical research.
Leidholdt EM Jr, William GE, McGuire LE.
VHA National Health Physics Program (115HP/NLR), U.S. Department of Veterans Affairs, 2200 Fort Roots Drive, North Little Rock, AR 72114, USA. edwin.leidholt@med.va.gov
The medical facilities of the U.S. Department of Veterans Affairs (VA) use radioactive material for health care and biomedical research. In the past, a single level of security for all radioactive material was generally deemed to be adequate. The events of 11 September 2001 prompted a reassessment of security. Based on site visits to VA facilities possessing a range of radioactive material typically used in health care and biomedical research, the VA National Health Physics Program has compiled recommendations for the security of radioactive material. A primary recommendation is to evaluate radioactive material from a risk perspective and use security measures commensurate with risk. The risk evaluation should consider activity, half-life, exposure rate constant, ALI, ease of removal/portability, and dispersibility. We concluded that current security measures are likely adequate for the risks associated with most nuclear medicine departments and biomedical research laboratories. However, for radioactive material of higher risk, particularly multicurie sources of long half-life, the radiation safety staff should consult with police/security experts to determine if additional security measures are warranted. This focus on risk should help optimize resource allocation. We also recommend that security evaluations consider both physical security and personnel security, training of staff with unescorted access to higher-risk radioactive material emphasize security issues, and disposal of higher-risk material not likely to be used. Finally, we note that the goals of security can be in conflict with hazard awareness and hazard communication.
PMID: 12865744 [PubMed - indexed for MEDLINE]
45: Healthc Exec. 2003 Jul-Aug;18(4):16-20.
Promoting patient safety through facility design.
Wolf EJ.
PMID: 12841056 [PubMed - indexed for MEDLINE]

16: Healthcare Benchmarks Qual Improv. 2003 Aug;10(8):92-3.
Nurses and pharmacists partner for patient safety.
[No authors listed]
Professions face serious challenge of work force shortages. Leaders of five organizations come together in first step of ambitious journey. Revolutionary

changes, not quick fixes, seen as solution.
PMID: 12901320 [PubMed - in process]

17: Home Healthc Nurse. 2003 Jul;21(7):481-8; quiz 489-90.
The Joint Commission's National Patient Safety Goals: implications for home care and hospice organizations.
Friedman MM.
PMID: 12858097 [PubMed - in process]

18: Hosp Peer Rev. 2003 Aug;28(8):113-5.
Don't let impairments jeopardize patient safety.
Spath P.
Brown-Spath & Associates, Forest Grove, OR, USA.
PMID: 12884485 [PubMed - in process]

19: Int J Health Care Qual Assur Inc Leadersh Health Serv. 2003;16(2-3):90-8.
Using clinical risk management as a means of enhancing patient safety: the Irish experience.
McElhinney J, Heffernan O.
North Western Health Board, Sligo Hospital, Sligo, Ireland.
This aper outlines the process and context in which the Clinical Risk Modification Project at Sligo Hospital, Ireland was established and focuses on the issues encountered from conception to implementation. The project is based in the emergency and orthopaedic departments and is of two years duration. The stated aim of this project is to design and test a framework incorporating the core components of a workable Clinical Risk Modification programme in the context of an Irish general hospital. This involved making an explicit commitment to the principles of a learning organisation including blame free risk reporting, providing education and awareness training to promote understanding of clinical risk management locally, and developing a clinical incident/near miss reporting system to address clinical risk in both a proactive and reactive way.
PMID: 12870248 [PubMed - in process]

20: J Clin Pharmacol. 2003 Jul;43(7):768-83.
Reducing medication errors and increasing patient safety: case studies in clinical pharmacology.
Benjamin DM.
Department of Pharmacology & Experimental Therapeutics, Tufts University School of Medicine, Boston, Massachusetts, USA.
Today, reducing medication errors and improving patient safety have become common topics of discussion for the president of the United States, federal and state legislators, the insurance industry, pharmaceutical companies, health care professionals, and patients. But this is not news to clinical pharmacologists. Improving the judicious use of medications and minimizing adverse drug reactions have always been key areas of research and study for those working in clinical pharmacology. However, added to the older terms of adverse drug reactions and rational therapeutics, the now politically correct expression of medication error has emerged. Focusing on the word error has drawn attention to "prevention" and what can be done to minimize mistakes and improve patient safety. Webster's New Collegiate Dictionary has several definitions of error, but the one that seems to be most appropriate in the context of medication errors is "an act that through ingnorance, deficiency, or accident departs from or fails to achieve what should be done." What should be done is generally known as "the five rights": the right drug, right dose, right route, right time, and

right patient. One can make an error of omission (failure to act correctly) or an error of commission (acted incorrectly). This article now summarizes what is currently known about medication errors and translates the information into case studies illustrating common scenarios leading to medication errors. Each case is analyzed to provide insight into how the medication error could have been prevented. "System errors" are described, and the application of failure mode effect analysis (FMEA) is presented to determine the part of the "safety net" that failed. Examples of reengineering the system to make it more "error proof" are presented. An error can be prevented. However, the practice of medicine, pharmacy, and nursing in the hospital setting is very complicated, and so many steps occur from "pen to patient" that there is a lot to analyze. Implementing safer practices requires developing safer systems. Many errors occur as a result of poor oral or written communications. Enhanced communication skills and better interactions among members of the health care team and the patient are essential. The informed consent process should be used as a patient safety tool, and the patient should be warned about material and foreseeable serious side effects and be told what signs and symptoms should be immediately reported to the physician before the patient is forced to go to the emergency department for urgent or emergency care. Last, reducing medication errors is an ongoing process of quality improvement. Faculty systems must be redesigned, and seamless, computerized integrated medication delivery must be instituted by health care professionals adequately trained to use such technological advances. Sloppy handwritten prescriptions should be replaced by computerized physician order entry, a very effective technique for reducing prescribing/ordering errors, but another far less expensive yet effective change would involve writing all drug orders in plain English, rather than continuing to use the elitists' arcane Latin words and shorthand abbreviations that are subject to misinterpretation. After all, effective communication is best accomplished when it is clear and simple.
PMID: 12856392 [PubMed - in process]

21: Jt Comm J Qual Saf. 2003 Jul;29(7):329-35.
Changing the culture of patient safety: leadership's role in health care quality improvement.
Cohen MM, Eustis MA, Gribbins RE.
Missouri Baptist Medical Center, BJC HealthCare, St Louis, USA. mcohen@bjc.org
BACKGROUND: For two decades health care workers have been struggling, with varying degrees of success, to use the principles of continuous quality improvement (CQI) to improve the quality of patient care. The Institute of Medicine report To Err Is Human prompted most hospitals to turn their attention to the pandemic of medical errors and to the realization that without changing the culture of blame, and thus releasing an avalanche of information, major improvement would not be possible. This article describes one community hospital's approach to changing its organizational culture and the critical role of leadership in that transformation. THE REALITIES: The places to look for trouble when diagnosing organizational problems are purpose, structure, rewards, helpful mechanisms, relationships, and leadership. Hospitals are professional bureaucracies in that the real power resides with clinical staff. Improvement requires that effective relationships be built within the executive suite. Relationship and team building must be part of the organizational culture. Quality improvement will not occur unless it is clearly aligned with the organization's core objectives. CONCLUSIONS: Managing the five realities is essential to creating a suitable environment for sustaining clinical or more general CQI efforts within health care organizations. This is particularly crucial if the basic culture of the organization is to be changed. All five

realities must be addressed on a continual basis, which takes time, and positive outcomes can be expected only over a longer rather than shorter time frame.
PMID: 12856554 [PubMed - indexed for MEDLINE]
22: Jt Comm J Qual Saf. 2003 Jul;29(7):363-8.
Using tools to assess and prevent inpatient falls.
Gowdy M, Godfrey S.
NortEast Medical Center, Concord, North Carolina, USA.
mgowdy@northeastmedical.org
BACKGROUND: Inpatient falls and fall-related injuries continue to be a complex challenge that health care organizations face. Protecting patients from falls and injury and ensuring a safe environment are fundamental to providing high-quality care. FACING THE PROBLEM: In June 2000 NorthEast Medical Center (Concord, North Carolina) experienced an inpatient fall rate (6.1 falls/1,000 patient days) that exceeded the internal benchmark (4.1 falls/1,000 patient days). The interdisciplinary Fall Team developed the Fall Risk Assessment tool. Patients were given a fall risk score and were categorized as either low or high risk. Interventions were chosen by the caregiver and became part of each patient's overall safety plan of care. THE NEXT STEP: Root cause analyses were performed for each inpatient fall to expose possible relationships between assessed fall risks and root causes. For example, approximately 80% of the patients who fell were confused, had gait disturbance, and were attempting to toilet alone. Through use of Failure Mode and Effects Analysis, the team was able to review the fall process in a prospective fashion. FOCUS ON HIGH-RISK INPATIENT POPULATIONS: In January 2001 the Fall Team began to focus on preventing falls in this patient population. An action plan for fall prevention was implemented, resulting in a decrease from 67 to 28 falls per 1,000 patient days. RESULTS: From the team's inception in June 2000 to the first quarter of 2003, the inpatient fall rate decreased from 6.1 to 2.6 falls per 1,000 patient days--a 43% decrease. With increased patient acuity and specialization in care of new and more challenging patient populations, health care organizations must quickly identify patients' fall risks and develop innovative methods to prevent falls.
PMID: 12856558 [PubMed - indexed for MEDLINE]

23: Jt Comm J Qual Saf. 2003 Jul;29(7):354-62.
Preventing medical errors by designing benign failures.
Grout JR.
Campbell School of Business, Berry College, Mt Berry, Georgia, USA.
jgrout@berry.edu
BACKGROUND: One way to successfully reduce medical errors is to design health care systems that are more resistant to the tendencies of human beings to err. One interdisciplinary approach entails creating design changes, mitigating human errors, and making human error irrelevant to outcomes. This approach is intended to facilitate the creation of benign failures, which have been called mistake-proofing devices and forcing functions elsewhere. USING FAULT TREES TO DESIGN FORCING FUNCTIONS: A fault tree is a graphical tool used to understand the relationships that either directly cause or contribute to the cause of a particular failure. A careful analysis of a fault tree enables the analyst to anticipate how the process will behave after the change. EXAMPLE OF AN APPLICATION: A scenario in which a patient is scalded while bathing can serve as an example of how multiple fault trees can be used to design forcing functions. The first fault tree shows the undesirable event--patient scalded while bathing. The second fault tree has a benign event--no water. Adding a scald valve changes the outcome from the undesirable event ("patient scalded while bathing") to the benign event ("no water") LIMITATIONS: Analysis of fault trees does not ensure

or guarantee that changes necessary to eliminate error actually occur. Most mistake-proofing is used to prevent simple errors and to create well-defended processes, but complex errors can also result. CONCLUSIONS: The utilization of mistake-proofing or forcing functions can be thought of as changing the logic of a process. Errors that formerly caused undesirable failures can be converted into the causes of benign failures. The use of fault trees can provide a variety of insights into the design of forcing functions that will improve patient safety.
PMID: 12856557 [PubMed - indexed for MEDLINE]

24: Jt Comm J Qual Saf. 2003 Jul;29(7):336-44.
Understanding hospital readiness for computerized physician order entry.
Stablein D, Welebob E, Johnson E, Metzger J, Burgess R, Classen DC.
First Consulting Group, Salt Lake City, UT, USA. dstablein@fcg.com
BACKGROUND: Many hospitals in the United States are in early stages of decision making and planning to implement computerized physician order entry (CPOE) to improve patient safety and quality of care. The targeted processes and the software for CPOE are complex, and implementation is a large-scale change effort for most hospitals. Hospitals can increase the likelihood of success by understanding and addressing gaps in CPOE readiness. ASSESSING CPOE READINESS: A
CPOE readiness assessment tool was developed that includes several different components: external environment; organizational leadership, structure, and culture; care standardization;, order management; access to information; information technology composition; and infrastructure. The presence or absence of these indicators in a particular hospital was determined by on-site interviews, walkarounds with direct observations, and document review. RESULTS: Assessment results for the first 17 hospitals (bed size, 75-906 beds) indicated that the lowest average component score was in care standardization, while the highest average component score was in organizational structure and function. Organizational culture and the order management process also had low average scores. CONCLUSIONS: This CPOE readiness assessment revealed significant gaps in all the hospitals examined. Identifying these gaps and addressing them before CPOE implementation can reduce risks. Organizations need to develop expertise at accomplishing and sustaining change; understanding and building CPOE readiness is an important first step.
PMID: 12856555 [PubMed - indexed for MEDLINE]

25: Nature. 2003 Jul 17;424(6946):246-8.
Nanotechnology: A little knowledge...
Brumfiel G.
Publication Types:
News
PMID: 12867950 [PubMed - indexed for MEDLINE]

26: Nurs Manage. 2003 Aug;34(8):22-3.
Continuous assessment and regular communication foster patient safety.
Blair PD.
Develop strategies to promote patient safety despite staffing crises.
PMID: 12888727 [PubMed - in process]

27: Nurs Manage. 2003 Aug;34(8):20-1.
Embracing National Patient Safety Goals, part 1 of 2.
Mooney MC.
Take an in-depth look at the National Patient Safety Goals to ensure your

organization's compliance.
PMID: 12888726 [PubMed - in process]

28: Plast Reconstr Surg. 2003 Aug;112(2):636-41; discussion 642-6.
Safety and efficacy in an accredited outpatient plastic surgery facility: a review of 5316 consecutive cases.
Byrd HS, Barton FE, Orenstein HH, Rohrich RJ, Burns AJ, Hobar PC, Haydon MS.
Department of Plastic Surgery, University of Texas Southwestern Medical Center, Dallas, 75390-9132, USA.
Advances in medicine have improved the delivery of health care, making it more technologically superior than ever and, at the same time, more complex. Nowhere is this more evident than in the surgical arena. Plastic surgeons are able to perform procedures safely in office-based facilities that were once reserved only for hospital operating rooms or ambulatory surgery centers. Performing procedures in the office is a convenience to both the surgeon and the patient. Some groups have challenged that performing plastic surgery procedures in an office-based facility compromises patient safety. Our study was done to determine whether outcomes are adversely affected by performing plastic surgery procedures in an accredited outpatient surgical center. A retrospective review was performed on 5316 consecutive cases completed between 1995 and 2000 at Dallas Day Surgical Center, Dallas, Texas, an outpatient surgical facility. Most cases were cosmetic procedures. All cases were analyzed for any potential morbidity or mortality. Complications requiring a return to the operating room were determined, as were infection rates. Events leading to inpatient hospitalization were also included. During this 6-year period, 35 complications (0.7 percent) and no deaths were reported. Most complications were secondary to hematoma formation (77 percent). The postoperative infection rate for patients requiring a return to the operating room was 0.11 percent. Seven patients required inpatient hospitalization following their procedure secondary to arrhythmias, angina, and pulmonary emboli. Patient safety must take precedence over cost and convenience. Any monetary savings or time gained is quickly lost if safety is compromised and complications are incurred. The safety profile of the outpatient facility must meet and even exceed that of the traditional hospital-based or ambulatory care facility. After reviewing our experience over the last 6 years that indicated few complications and no deaths, we continue to support the judicious use of accredited outpatient surgical facilities by board-certified plastic surgeons in the management of plastic surgery patients.
PMID: 12900627 [PubMed - in process]

29: Qual Saf Health Care. 2003 Aug;12(4):291-4.
Less is (sometimes) more in cognitive engineering: the role of automation technology in improving patient safety.
Vicente KJ.
There is a tendency to assume that medical error can be stamped out by automation. Technology may improve patient safety, but cognitive engineering research findings in several complex safety critical systems, including both aviation and health care, show that more is not always better. Less sophisticated technological systems can sometimes lead to better performance than more sophisticated systems. This "less is more" effect arises because safety critical systems are open systems where unanticipated events are bound to occur. In these contexts, decision support provided by a technological aid will be less than perfect because there will always be situations that the technology cannot accommodate. Designing sophisticated automation that suggests an uncertain course of action seems to encourage people to accept the imperfect advice, even though information to decide independently on a better course of

action is available. It may be preferable to create more modest designs that merely provide feedback about the current state of affairs or that critique human generated solutions than to rush to automate by creating sophisticated technological systems that recommend (fallible) courses of action.
PMID: 12897363 [PubMed - in process]

30: Spine. 2003 Aug 1;28(15):S54-61.
Intraoperative spinal navigation.
Holly LT, Foley KT.
*Division of Neurosurgery, UCLA Medical Center, Los Angeles, California.
STUDY DESIGN Review article.OBJECTIVES To provide a detailed overview of current methods for intraoperative spinal navigation using image-guided surgical technology.SUMMARY OF BACKGROUND DATA The development of novel intraoperative
navigational techniques has been an important advancement in the field of spine surgery. These techniques, commonly referred to as image-guided surgery (IGS), provide simultaneous, multiplanar views of spinal anatomy. They can be used for detailed preoperative planning and allow the spinal surgeon to track the position of surgical instruments in real time. IGS technology can increase the accuracy of spinal instrumentation procedures and improve patient safety.METHODS The relevant medical literature was reviewed, as was the authors' clinical and laboratory experience with intraoperative spinal navigation.RESULTS Image-guided spinal instrumentation procedures in the cervical, thoracic, and lumbar spine have lower rates of screw misplacement than do those performed without image guidance. In a typical IGS spinal procedure, surgical instruments are tracked in the operating room, and their positions are superimposed onto preoperatively acquired computed tomography scans (CT-based image guidance) or intraoperatively acquired fluoroscopic images (virtual fluoroscopy). A new development, the combination of isocentric C-arm fluoroscopy with computer-assisted image guidance, allows the C-arm to create intraoperative CT images that can be used for image-guided navigation without the need for a surgeon-dependent registration step. Each of these technologies has distinct advantages and limitations.CONCLUSIONS Intraoperative spinal navigation has advanced rapidly in recent years, beneficially affecting a variety of surgical procedures. Future technological developments will widen its clinical application and minimize its shortcomings.
PMID: 12897475 [PubMed - in process]

31: Transfus Med Rev. 2003 Jul;17(3):169-80.
Patient safety and blood transfusion: New solutions.
Dzik WH, Corwin H, Goodnough LT, Higgins M, Kaplan H, Murphy M, Ness P, Shulman
IA, Yomtovian R.
Current risk from transfusion is largely because of noninfectious hazards and defects in the overall process of delivering safe transfusion therapy. Safe transfusion therapy depends on a complex process that requires integration and coordination among multiple hospital services including laboratory medicine, nursing, anesthesia, surgery, clerical support, and transportation. The multidisciplinary hospital transfusion committee has been traditionally charged with oversight of transfusion safety. However, in recent years, this committee may have been neglected in many institutions. Resurgence in hospital oversight of patient safety and transfusion efficacy is an important strategy for change. A new position, the transfusion safety officer (TSO), has been developed in some nations to specifically identify, resolve, and monitor organizational weakness leading to unsafe transfusion practice. New technology is becoming increasingly

available to improve the performance of sample labeling and the bedside clerical check. Several technology solutions are in various stages of development and include wireless handheld portable digital assistants, advanced bar coding, radiofrequency identification, and imbedded chip technology. Technology-based solutions for transfusion safety will depend on the larger issue of the technology for patient identification. Devices for transfusion safety hold exciting promise but need to undergo clinical trials to show effectiveness and ease of use. Technology solutions will likely require integration with delivery of pharmaceuticals to be financially acceptable to hospitals.
PMID: 12881778 [PubMed - in process]